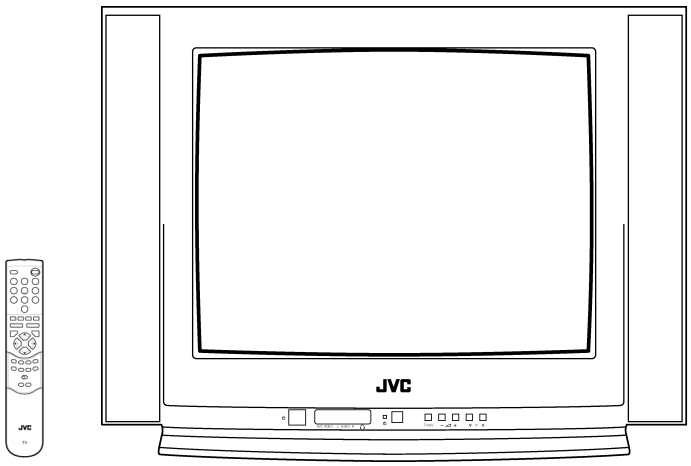
JVC

SERVICE MANUAL

COLOUR TELEVISION

AV-21BD5EKI / AV-21BD5EP / AV-21BD5EE
AV-21BD5EKIS / AV-21BD5EPS / AV-21BD5EES



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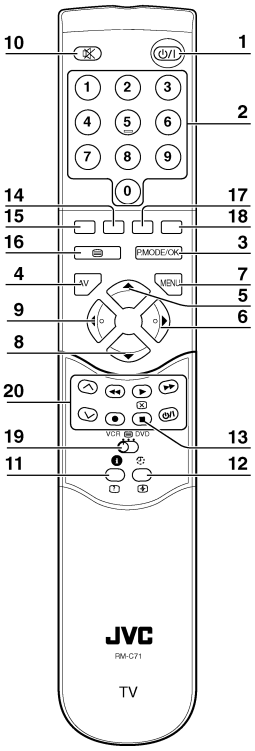
No.51742
Jul. 2000

REMOTE CONTROL

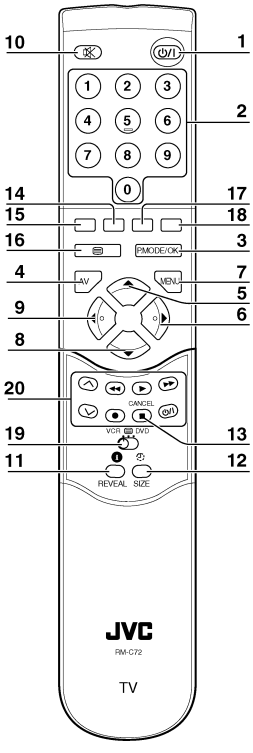
TV mode

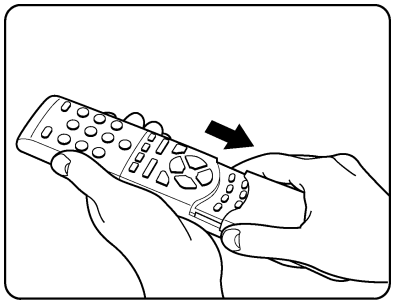
1. POWER
2. NUMBER 0-9 / NUMBER
3. P.MODE / OK
4. AV
5. UP
6. RIGHT
7. MENU
8. DOWN
9. LEFT
10. MUTING
11. RECALL
12. SLEEP
13. Not used
14. MOVE
15. SKIP
16. TV / TEXT
17. DELETE
18. MODE
19. VCR / ▤ / DVD switch
20. VCR / DVD Control buttons

RM-C71



RM-C72





TELETEXT mode

1. POWER
2. NUMBER 0-9
3. INDEX
4. Not used
5. UP
6. SUBPAGE
7. MENU
8. DOWN
9. HOLD
10. MUTING
11. REVEAL
12. SIZE
13. CANCEL
14. GREEN
15. RED
16. TV / TEXT
17. YELLOW
18. CYAN
19. VCR ▤ / DVD switch
20. Not used

SERVICE ADJUSTMENTS

BEFORE ADJUSTMENT AND MAINTENANCE

1. Don't short any two soldering points or connect any component while TV set is power on.
2. Withdraw power plug before maintenance.
3. In order to ensure safety all components replaced should be identical. (For further details, refer to the component name and component No. in PARTS LIST.)
4. Must be warm up the set for 30 minutes or more and degauss CRT thoroughly with demagnetizer coil before adjustment.

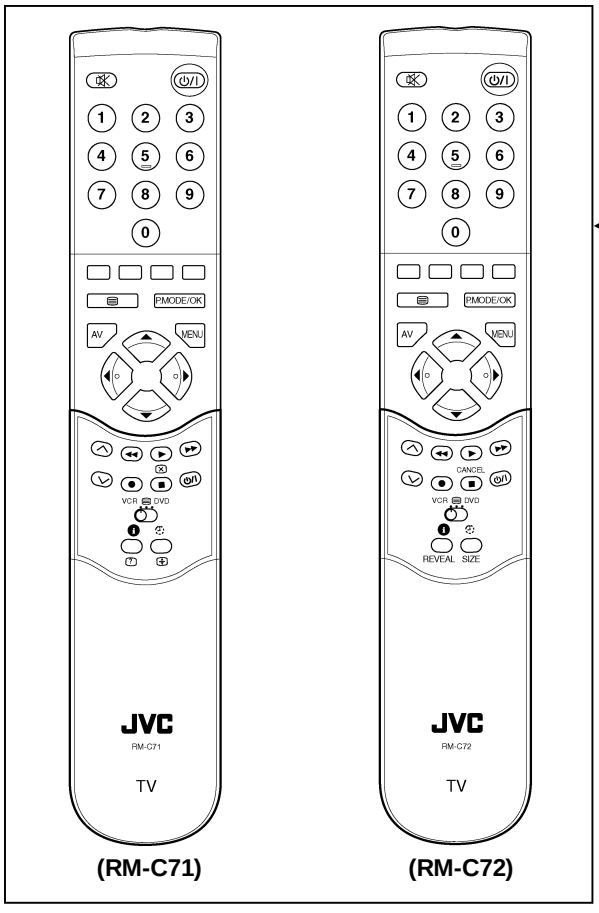
EQUIPMENT FOR ADJUSTMENT

1. Pattern Generator
2. Digital volt meter
3. Oscilloscope
4. Demagnetizer
5. **Service** remote controller (For repair service)
6. Remote controller (RM-C71 or RM-C72)

ADJUSTMENTS PROCEDURES

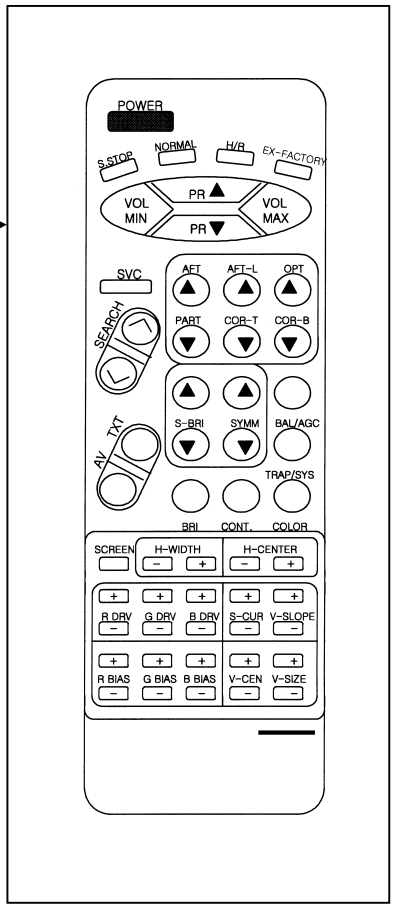
+B VOLTAGE CHECK

1. Receive a standard colour bar signal.
2. Connect digital volt meter between + of B1 Line circuit and GND.
3. Confirm that voltage is DC 123V $\pm$ 2.0V.



(RM-C71) (RM-C72)

Remote Controller



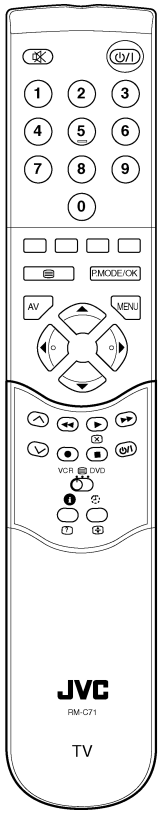
Service Remote Controller

BASIC OPERATION OF SERVICE MENU

REMOTE CONTROLLER (RM-C71, RM-C72)

How to ENTER and EXIT from service mode

1. Select the CH-91.
2. Press the MENU KEY of the remote control unit and select PICTURE from the MENU with the P.(▲)/ P.(▼) key of the remote control unit .
3. While pressing the P. MODE/OK KEY of the remote control unit, select "sharpness" from the MENU with the P.(▲)/ P.(▼) / ◀ -/ ▶ + key. Then, set the set value of "sharpness" to "0" with the ◀ -/▶ +KEY.
4. Press the MENU KEY of the remote control unit twice and return to the normal screen. To enter the SERVICE MODE, change the indication of RED, GREEN and MENU, in turn, with the key of the remote control unit.
5. When exiting from the SERVICE MODE, turn the power switch off.



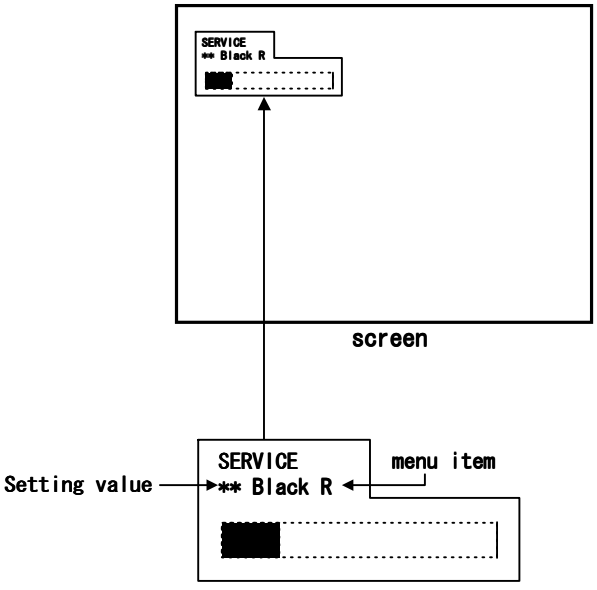
How to set SERVICE MODE

1. Select the setting item you want to change with the P.(▲)/ P.(▼) key on the remote control unit. (The item you selected will be indicated by YELLOW on the display.)
2. When changing the set values, use the ◀ -/▶ +KEY on the remote control unit.
3. When the setting has been completed, turn the power switch off. (The changed set values are stored in memory.)

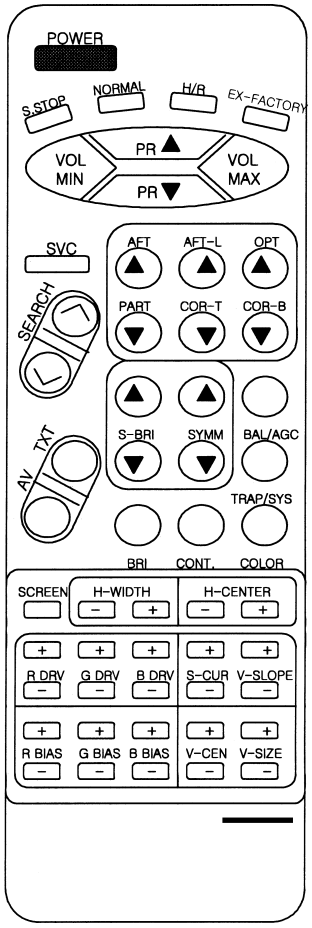
SERVICE MENU screen selection

Press the P.(▲)/ P.(▼) key ····· select menu item.
(The letters of the selected items are displayed in yellow)
Press the ◀ -/▶ +KEY ····· setting the value item.

- ·AGC
- ·Black R
- ·Black G
- ·WP Red
- ·WP Green
- ·WP Blue
- ·H Parall
- ·H Bow
- ·H Shift
- ·V Slope
- ·V Amp
- ·VS Cor
- ·V Shift
- ·H Width
- ·EW Parabo
- ·Up Corner
- ·Dw Corner
- ·EW Trapez
- ·Option



FUNCTION OF SERVICE REMOTE CONTROLLER



Service Remote Controller

POWER	: Power On/Off key
S STOP	: User R/C mode change (DW→JVC→AIWA)
NORMAL	: NORMAL Ⅰ →NORMAL Ⅱ →Favorite
H/R	: Fast heat-run mode in line production
EX-FACTORY	: Not use
VOL MIN	: Volume minimum key
VOL MAX	: Volume maximum key
PR+	: Program up key
PR-	: Program down key
SVC	: Service mode On/Off key
AFT	: AFT adjustment key
AFT-L	: SECAM L AFT adjustment key
OPT	: AGC adjustment key
PART	: Not use
COR-T	: Not use
COR-B	: Not use
SEARCH	: Search up/down key
AV	: AV mode/TV mode toggle key
TXT	: Teletext On/Off key
S-BRI	: Sub-brightness adjustment key
SYMM	: Not use
BAL / AGC	: LED EAST Yes/No toggle key
BRI	: Brightness Min/Max toggle key
CONT	: Contrast Min/Max toggle key
COLOR	: Color Min/Max toggle key
SCREEN	: Horizontal 1 line display key for screen adjustment
H-WIDTH	: H. width adjustment key
H-CENTER	: H. center adjustment key
R DRV	: R drive adjustment key for W/B high beam
G DRV	: G drive adjustment key for W/B high beam
B DRV	: B drive adjustment key for W/B high beam (Do not adjust : B is the reference)
R BIAS	: R bias adjustment key for W/B low beam
G BIAS	: G bias adjustment key for W/B low beam
B BIAS	: B bias adjustment key for W/B low beam (Do not adjust : B is the reference)
S-CUR	: Not use
V-SLOPE	: Not use
V-CEN	: Vertical center adjustment key
V-SIZE	: Vertical size adjustment key

ADJUSTMENTS

SELECT OPTION ITEM

Option	Tuner maker	Cut off / video Amp.
0	DAEWOO / SAMSUNG	140V / 92V
2	SIEL	140V / 92V

G2 ALIGNMENT

1 TV in AV mode without video signal ⇒ Black screen.

2 TV preset with WP Red, WP Green and WP Blue equal to 32.

3 TV preset with Black R, Black G equal to 8.

4 Set TV in NORMAL I mode.

5 Adjust screen volume (on FBT) such that the highest cathode cut-off voltage measured on CRT board, is Vcut off ±5V.

Screen size	Vcut-off
21″	125V

WHITE BALANCE

NOTE
- When the WHITE BALANCE adjustments are carried out, it is necessary to use the service remocon.
- Confirm G2 Alignment has been adjusted.

■ Low Light

1 Press the TV / AV button on the front of the TV unit and enter the VIDEO MODE.

2 Input a crosshatch pattern signal.

3 Press the SVC key to display the SVC screen as shown in Fig.1.

4 Press the SCREEN key to display the single horizontal line.

5 Check the color of the single horizontal line being displayed.

6 Press the SCREEN key to disappear the single horizontal line.

7 Adjust the bias values of R, G and B with their respective +/- keys so that the single horizontal line on the screen becomes “white”.

8 While pressing the SCREEN key, check the color of the single horizontal line on the screen.

9 Repeat the steps 5 ～ 8 above until the single horizontal line on the screen becomes “white”.

■ High Light

⑩ Press the SCREEN key to display the single horizontal line.

⑪ In the same manner as for “Low Light”, adjust R DRIVE and G DRIVE with their respective +/- keys.

⑫ When the adjustment has been completed, press the SVC button to exit from the ADJ’MENT MODE.

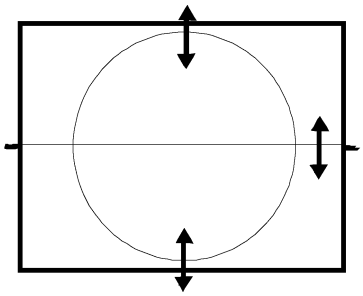
FOCUS

1 Input a crosshatch pattern signal

2 Adjust the FOCUS volume (on FBT) to have the best resolution on screen.

VERTICAL GEOMETRY

Adjust the V Amp, V Shift, VSC or and V slope to compensate for vertical distortion.

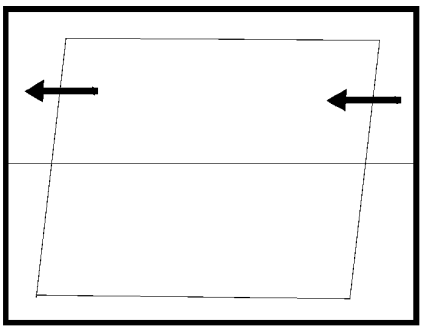


HORIZONTAL PICTURE CENTERING

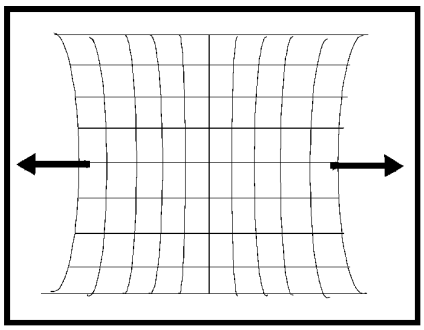
Adjust H Shift, to have the picture in the center of the screen.

EAST / WEST CORRECTION

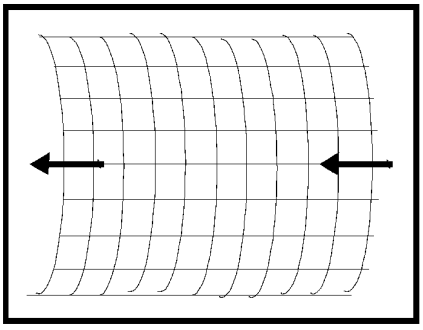
Adjust the H. Parall, H. Bow, H. Widdth, EW. Parabo, Up corner, Dw Corner, EW Trapez to compensate for geometrical distortion.



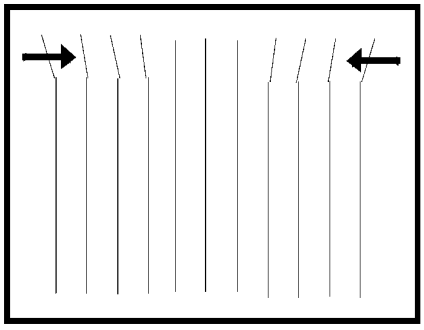
H. Parall



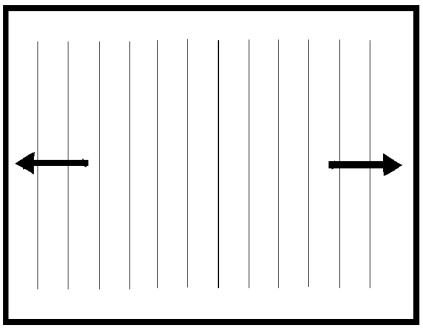
EW.Parabo



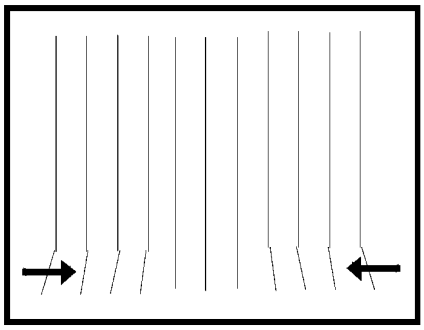
H. Bow



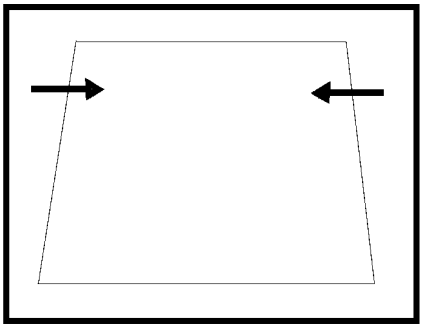
Up Corner



H.Width

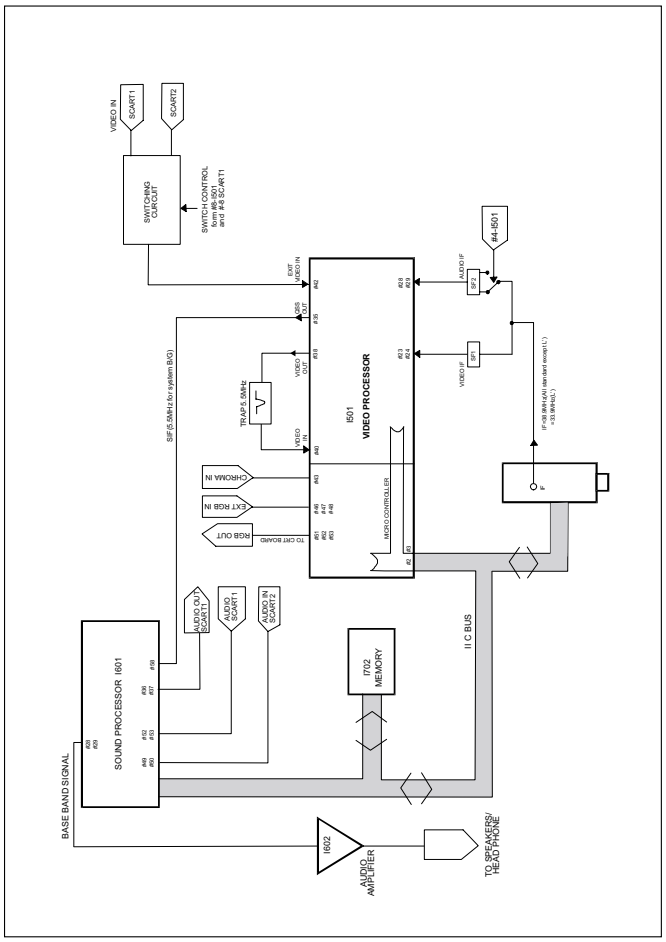


Dw Corner



EW Trapez

BLOCK DIAGRAM



AV-21BD5EKI AV-21BD5EP AV-21BD5EE
AV-21BD5EKIS AV-21BD5EPS AV-21BD5EES

AV-21BD5EKI / AV-21BD5EP / AV-21BD5EE
AV-21BD5EKIS / AV-21BD5EPS / AV-21BD5EES

STANDARD CIRCUIT DIAGRAM

■ NOTE :

1. RESISTANCE IS SHOWN IN OHM. K=1000, M=1000000
2. UNLESS OTHERWISE NOTED IN SCHEMATIC ALL CAPACITOR VALUES ARE EXPRESSED IN μF
3. VOLTAGES READ WITH "VTVM" FROM POINT INDICATED TO CHASSIS GROUND USING A COLOR BAR SIGNAL WITH ALL CONTROLS AT NORMAL LINE 230V AC VOLTAGE READINGS SHOWN ARE NORMAL VALUES AND MAY VARY +20% EXCEPT H.V
4. THIS CIRCUIT DIAGRAM IS A STANDARD ONE CIRCUIT PRINTED MAY BE SUBJECT TO CHANGE FOR PRODUCT IMPROVEMENT WITHOUT PRIOR NOTICE.

■ WARNING :

BEFORE SERVICING THE CHASSIS, READ "X-RAY RADIATION", "SAFETY PRECAUTION", AND "PRODUCT SAFETY NOTICE" IN SERVICE MANUAL.

■ PRODUCT SAFETY NOTE :

COMPONENTS MARKED WITH ⚠ ARE IMPORTANT FOR MAINTAINING.
THE SAFETY OF THE SET AND SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ORIGINAL OR SPECIFIED ONE IN THE PARTS LIST.
DON'T DEGRADE THE SAFETY THROUGH IMPROPER SERVICING.

■ CAUTION TO SERVICE TECHNICIANS :

BEFORE RETURNING THE RECEIVER TO CUSTOMER, LEAKAGE CURRENT OR RESISTANCE MEASUREMENTS SHOULD BE PERFORMED TO DETERMINE THAT EXPOSED PARTS ARE PROPERLY INSULATED FROM THE SUPPLY CIRCUIT.

RESISTOR

CARBON FILM	-WV-	
R M-OXIDE	-WV-	(M)
CARBON COMP	-WV-	(CC)
FUSIBLE	-WV-	(F)
CEMENT	-WV-	(C)

CAPACITOR

ELECTRO	⊣⊢	
CERAMIC	⊣⊢	
CERAMIC CH	⊣⊢	(CH)
ELECTRO NONPOLAR	⊣⊢	(NP)
MYLAR	⊣⊢	(M)

COIL

PEAKING	-ᔓ-	
CHOKE	-ᔓ-	(C)
BEAD	-ᔓ-	(B)

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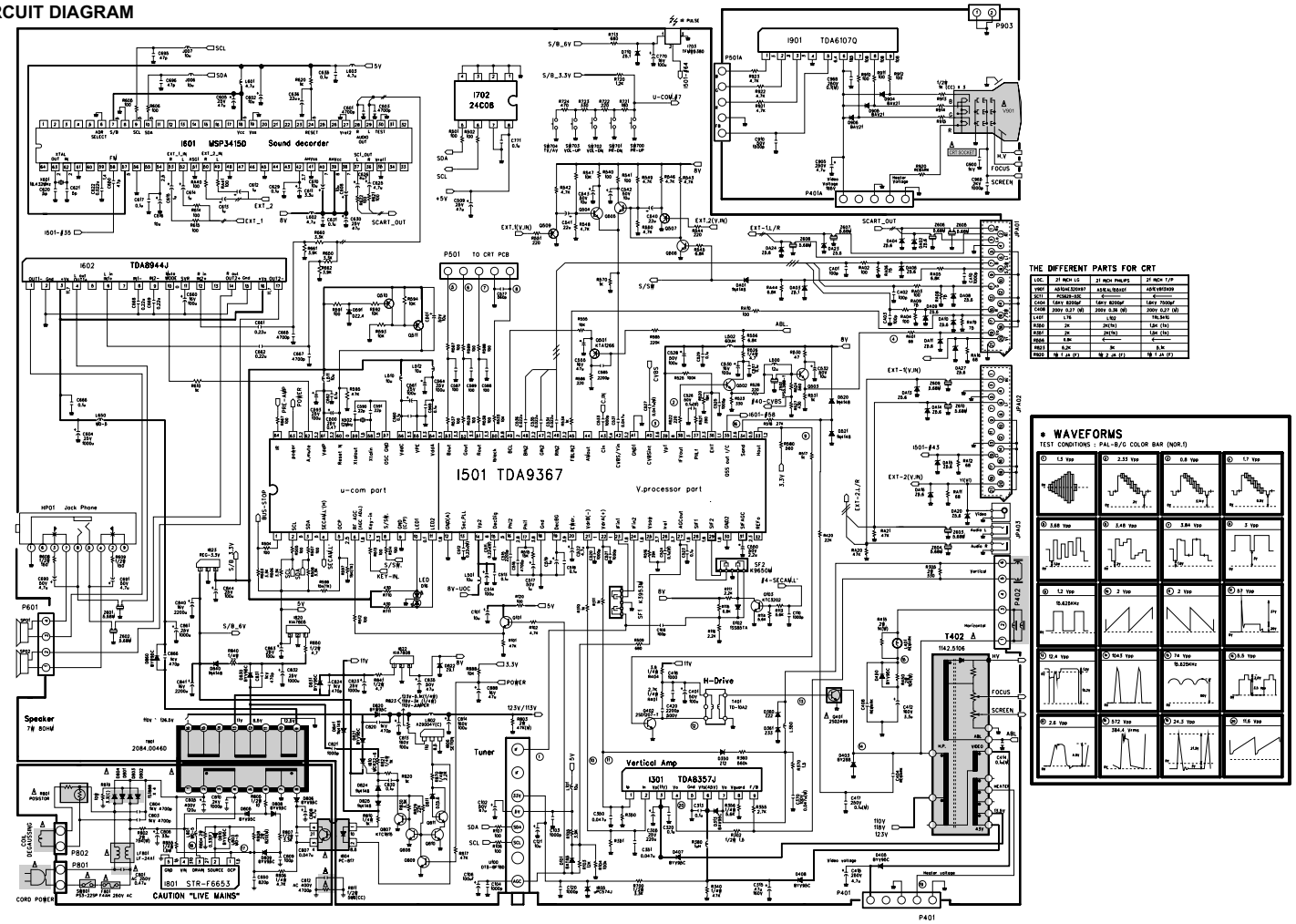
AV-21BD5EKI AV-21BD5EP AV-21BD5EE
AV-21BD5EKIS AV-21BD5EPS AV-21BD5EES

CIRCUIT DIAGRAM

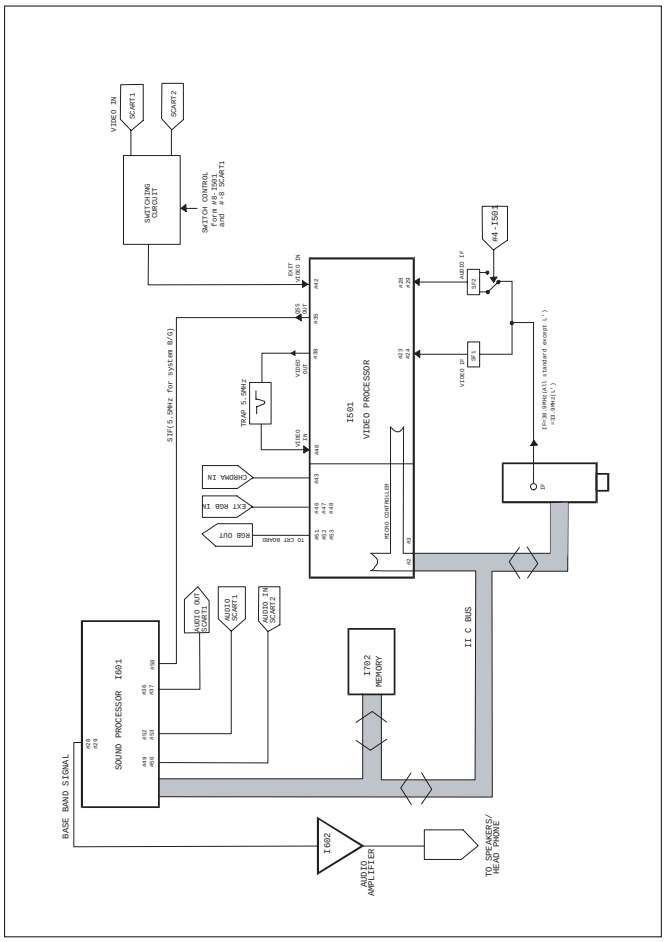


THE DIFFERENT PARTS FOR CRT

LOC.	21 INCH LG	21 INCH PHILIPS	21 INCH T/P
V901	A51GNE320X07	A51EJL20X01	A51EVB13X09
SC11	P2562E-155	←	←
C404	1.8nV 8200pF	1.8nV 8200pF	1.8nV 7500pF
C408	200V 0.27 (M)	200V 0.36 (M)	200V 0.27 (M)
L407	L76	L152	76.34G
R382	2K	2K(1%)	1.2K (1%)
R387	2K	2K(1%)	1.2K (1%)
R666	6.8K	←	←
R823	6.2K	3K	6.2K
R905	1W 1.2A (F)	1W 1.2A (F)	1W 1.2A (F)

WAVEFORMS
TEST CONDITIONS : PAL-B/G COLOR BAR (NOR.1)

BLOCK DIAGRAM



REVISED

Please throw it out the service manual for AV-21BD5EKI/EKIS/EP/EPS/EE/EES issued in Jul. 2000,and use this service manual (No.51742 Oct. 2000).

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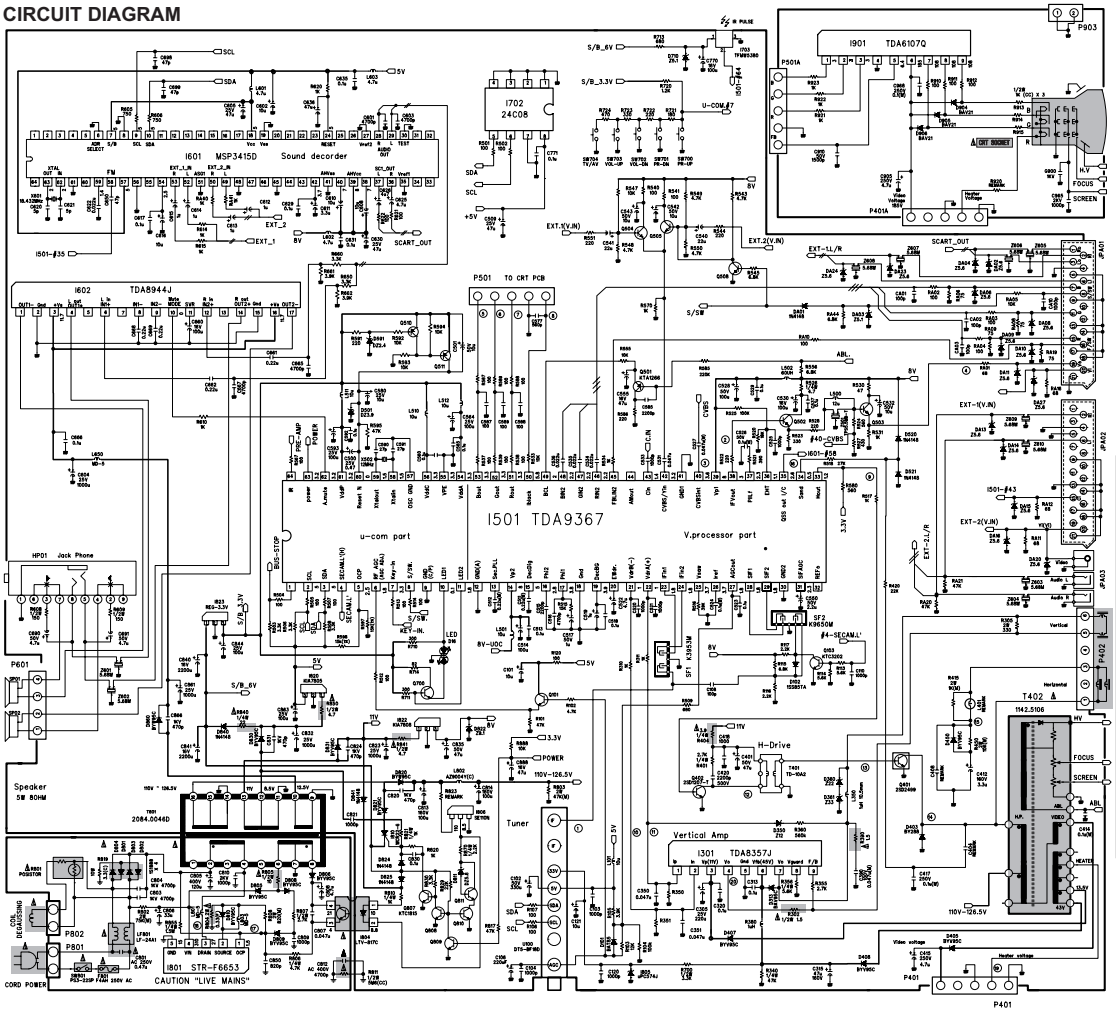
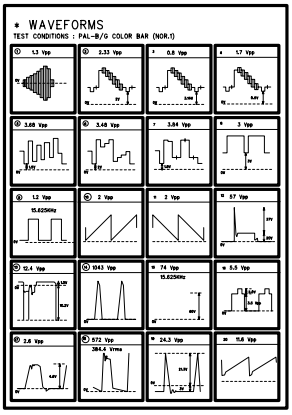
CIRCUIT DIAGRAM



DIFFERENCE LIST

⚠	SYMBOL	AV-21BD5EP/EPS	AV-21BD5EKI/EKIS	AV-21BD5EE/EES
⚠	CRT(ITC)	4859629361C		
⚠	POWER CORD	4859906210	4859906310	4859906210
	PWB ASSY	PTMPMSA21Y3FPJ		PTMPMSA21Y3KPJ
	I501	1DW3673AE3		1DW3673AD3

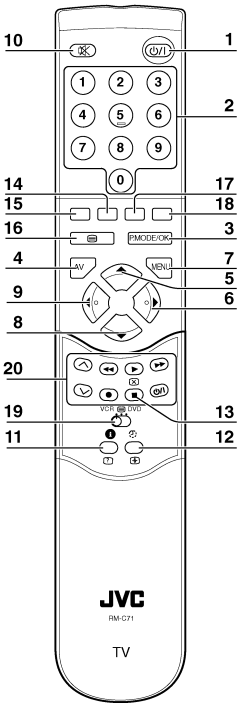


REMOTE CONTROL UNIT

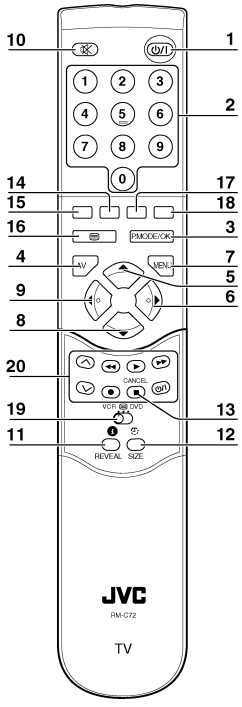
TV mode

1. POWER
2. NUMBER 0-9 / NUMBER
3. P.MODE / OK
4. AV
5. UP
6. RIGHT
7. MENU
8. DOWN
9. LEFT
10. MUTING
11. RECALL
12. SLEEP
13. Not used
14. MOVE
15. SKIP
16. TV / TEXT
17. DELETE
18. MODE
19. VCR / ▤ / DVD switch
20. VCR / DVD Control buttons

48B00RMC71
[EP / EPS / EE / EES]

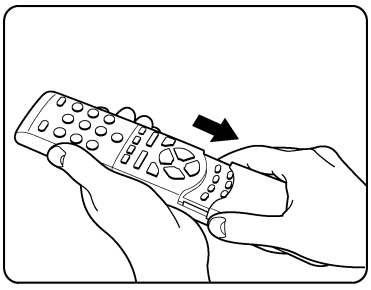


48B00RMC72
[EKI / EKIS]



TELETEXT mode

1. POWER
2. NUMBER 0-9
3. INDEX
4. Not used
5. UP
6. SUBPAGE
7. MENU
8. DOWN
9. HOLD
10. MUTING
11. REVEAL
12. SIZE
13. CANCEL
14. GREEN
15. RED
16. TV / TEXT
17. YELLOW
18. CYAN
19. VCR / ▤ / DVD switch
20. Not used



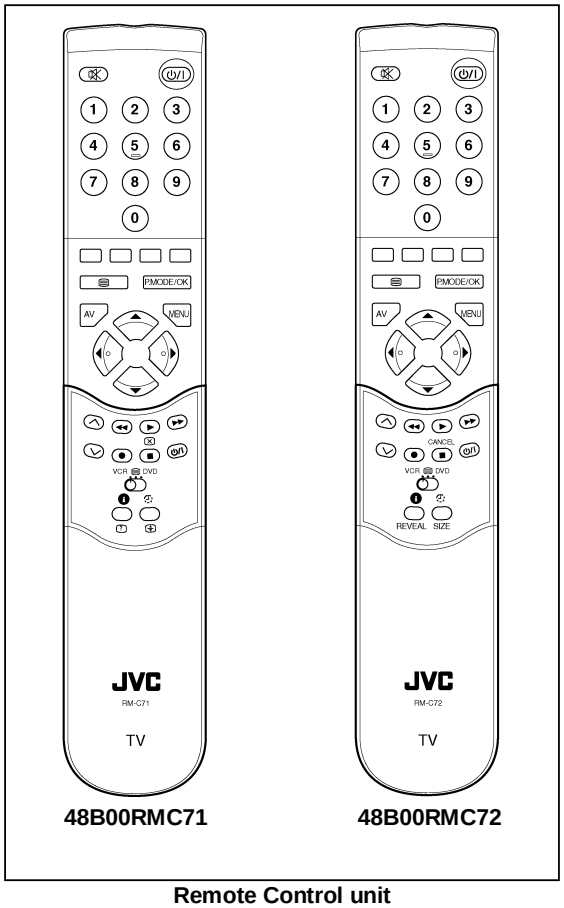
SERVICE ADJUSTMENTS

BEFORE ADJUSTMENT AND MAINTENANCE

1. Don't short any two soldering points or connect any component while TV set is power on.
2. Withdraw power plug before maintenance.
3. In order to ensure safety all components replaced should be identical. (For further details, refer to the component name and component No. in PARTS LIST.)
4. Must be warm up the set for 30 minutes or more and degauss CRT thoroughly with demagnetizer coil before adjustment.

EQUIPMENT FOR ADJUSTMENT

1. Pattern Generator
2. Digital volt meter
3. Oscilloscope
4. Demagnetizer
5. Remote control unit



Remote Control unit

BASIC OPERATION OF SERVICE MENU

How to ENTER and EXIT from SERVICE MODE

1. Press the MUTING KEY and RECALL KEY of the REMOTE CONTOROL UNIT at the same time to display the service MENU screen shown Fig. B.
2. When exiting from the SERVICE MODE, turn the power switch off.

How to set SERVICE MODE

0. Select the setting item you want to change with the P.(▲)/ P.(▼) key on the REMOTE CONTROL UNIT. (The item you selected will be indicated by YELLOW on the display.)
2. When changing the set values, use the ◀ -/▶ +KEY on the REMOTE CONTROL UNIT.
3. When the setting has been completed, turn the power switch off.
   (The changed set values are stored in memory.)

SERVICE MENU screen selection

- Press the P.(▲) / P.(▼) key ····· select menu item.
  (The letters of the selected items are displayed in yellow)
- Press the ◀ - / ▶ + key ····· setting the value item.

No	Adjustment item	
1	AGC	
2	Black R	
3	Black G	
4	WP Red	
5	WP Green	
6	WP Blue	
7	H Parall	(NOT USED)
8	H Bow	(NOT USED)
9	H Shift	
10	V Slope	
11	V Amp	
12	V S Cor	
13	V Shift	
14	H Width	(NOT USED)
15	EW Parabo	(NOT USED)
16	Up Corner	(NOT USED)
17	Dw Corner	(NOT USED)
18	EW Trapez	(NOT USED)
19	Option	

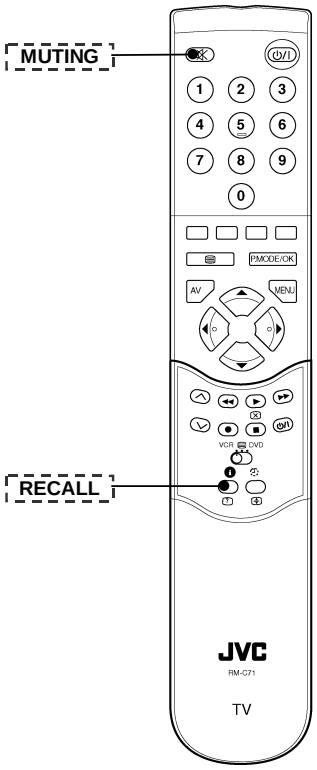


Fig. A

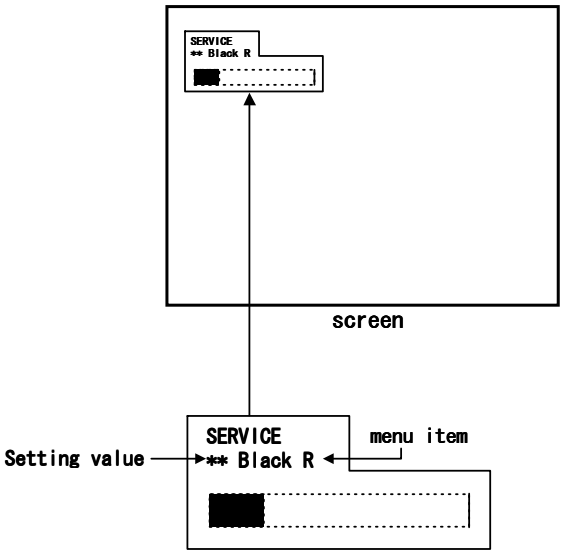


Fig. B

ADJUSTMENTS

+B VOLTAGE CHECK

1. Receive the standard colour bar signal.
2. Connect digital voltmeter between + of B1 Line circuit and GND.
3. Confirm that voltage is DC 123V ± 2.0V.

SCREEN

1. Set TV in AV mode without video signal ⇒ Black screen.
2. Set [WP Red], [WP Green] and [WP Blue] equal to “32”.
3. Set [Black R], [Black G] equal to “8”.
4. Set TV in normal I mode.
5. Adjust SCREEN VR (on FBT) such that the highest cathode cut-off voltage measured on CRT SOCKET PWB ASS’Y is DC 125V ± 5V.

WHITE BALANCE

NOTE : Confirm SCREEN Adjustment has been adjusted.

■ LOW LIGHT

1. Input the 10-step gray scale signal. (include10% Black)
2. Enter the SERVICE MODE.
3. Turn the SCREEN VR (on FBT) gradually, to where the 2nd gray bar(10% Black) faintly visible.
4. Adjust [Black B] and [Black R] not to the colours on the gray bar.

■ HIGH LIGHT

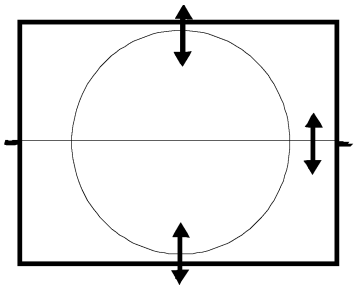
5. Apply the white signal.
6. Adjust [R DRIVE] and [G DRIVE] so that the picture becomes white.

FOCUS

1. Input the crosshatch pattern signal.
2. Adjust the FOCUS VR (on FBT) to have the best resolution on screen.

VERTICAL GEOMETRY

Adjust [V Amp], [V Shift] and [V Slope], [V Slope] [V S Cor] to compensate for vertical distortion.



HORIZONTAL PICTURE CENTERING

Adjust [H Shift] to have the picture in the center of the screen.